

"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210013-7

TITLE--SPIN PROBE METHOD FOR STUDYING ORIENTED POLYMERS -U
UNCLASSIFIED PROCESSING DATE--16OCT70

AUTHOR--(05)-STRYUKOV, V.B., ROZANTSEV, E.G., KASHLINSKIY, A.I., MALTSEVA,

N.G., TIBANOV, I.F.
COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(4), 895-7

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS, CHEMISTRY, PHYSICS

TOPIC TAGS--AMORPHOUS POLYMER, POLYETHYLENE TEREPHTHALATE, CAPRONE,
CAPROLACTAM, POLYPROPYLENE FIBER, ORGANIC OXYGEN COMPOUND, ROTATION
SPECTRUM, ELECTRON PROBE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/2009

CIRC ACCESSION NO--AT0112964

STEP NO--UR70020/70/190/004/0895/0897

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210013-7"

U18
CIRC ACCESSION NO--AT0112964

UNCLASSIFIED

PROCESSING DATE--16OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CHANGES OCCURRING IN THE AMORPHOUS REGIONS OF POLY(ETHYLENE TEREPHTHALATE) (LAVSAN) (I), POLYCAPROLACTAM (KAPRON) (II), AND POLYPROPYLENE (III) UPON ELONGATION OF I, II, AND III FIBERS WERE STUDIED BY USING 2,2,6,6TETRAMETHYL,4,OXOPIPERIDINOXY RADICAL (IV) AS A PROBE AT SIMILAR TO 9300 MHZ. THE ROTATION OF IV WAS GREATLY INHIBITED IN I Owing TO THE HIGH RIGIDITY OF ITS AMORPHOUS REGIONS; ON THE OTHER HAND, IN STRETCHED AND ORIENTED I OR II YARN, IV MOVED RATHER FREELY IN CERTAIN REGIONS OF THE POLYMER, SUGGESTING THE FORMATION OF MICROCAVITIES IN THE AMORPHOUS REGION OF THE POLYMER. THE ROTATION OF IV IN III FIBERS WAS GREATLY INHIBITED (THE ROTATIONAL DIFFUSION COEFF. DECLINED BY A FACTOR OF 10), INDICATING THAT THE RIGIDITY OF AMORPHOUS REGIONS OF III MARKEDLY INCREASED DURING THE FORMATION OF ORIENTED FIBERS.

FACILITY:

UNCLASSIFIED

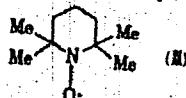
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170100194 Abstracting Service:
CHEMICAL ABST.

Ref. Code

6-70
4R0620

111959a Morphological features of polyformaldehyde studied by a spin probe method. Stryukov, V. B.; Dubovitskii, A. V.; Rozenberg, B. A.; Enikolopyan, N. S. [Inst. Khim. Fiz., Moscow, USSR]. Dokl. Akad. Nauk SSSR 1970, 190(3), 842-4 [Phys. Chem.] (Russ). The EPR spectra of polyformaldehyde (I) samples, contg. II (used as a spin probe) depend on the distribution of II in I, which in turn is dependent on the type of the mol. packing of I amorphous regions. The spectral differences between I prep'd. by the cationic polymn. of trioxane and anionic polymn. of gaseous HCHO, using Ph₃CSbF₆ or Sn steurate, resp., as the catalysts, showed that the former has more compact amorphous regions and it absorbs II slower.



CPJR

REEL/FRAME
198415/6

CB-7

STRYUKOV, V. L.

Polymer

THE RHEOLOGY OF POLYMERS

(Symposium in Moscow)

Article by Director of Physical and Mathematical Sciences Academy of Sciences of the USSR, Moscow, V. S. AURAT, 1972, pp 119-121]

Rheological investigations are being developed in physicochemical work pursuing the goal of establishing and its macroscopic properties and connection of the mechanics of chains and secondly, as a source and in solving the kinematic and dynamic parameters of polymerization to analysis of concrete technology problems and their finalized by the Institute symposium on the rheology of polymers. Tepchizhev of the AS USSR and held on 10-14 April in Moscow. The main attention was given to the first direction of investigation. Participating in the sessions were over 500 persons, including a group of scientists from East Germany, Poland, Czechoslovakia, Bulgaria, about 100 reports were heard. Discussed in detail of the molecular chemistry and mechanics of problems connected with the physical properties, and the construction of polymeric materials, study their conditions of deformation with detailed consideration of viscoelastic parameters of reliability characterized samples of the problem of the liquid crystalline state and the influence of the physical structure of the system on its rheological properties.

The symposium was opened with the address of greeting of K. A. Andrianov and A. Yu. Ishinskii who emphasized the

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comprehensive importance of rheological investigations in polymer sciences as a static and motion applications of large molecular weight compounds and compositions based on them for structural purposes. Thus was heard the survey report of K. V. Vinogradov who sketched contemporary concepts of the connection of the molecular structure and biological properties of polymers. Systematic investigations of the viscoelastic properties and quantity of monospecies polymers with different flexibility of the chain, conducted in recent years, have made it possible to quantitatively estimate the role of the length of the molecular chain in manifestations of mechanical properties characteristic of polymeric systems. In particular, the limiting conditions of deformation, when the polymer still preserves elasticity and can be processed in stable conditions, have been established. Another aspect of that problem is connected with the determination of general regularities of the transition of the polymer into the highly elastic state as a function of the intensity of deformation and with finding a correlation between the behavior of the polymer in different states and of its structure.

The reports of Iu. Ya. Satskin, G. M. Vashchenko, Ye. G. Anufrieva and others were devoted to general problems of polymer physics in connection with study of the processes of viscoelastic and dielectric relaxation in different physical states and evaluation of the correspondence of those processes with the conformational properties of polymeric chains. Also belonging to the same physical direction was the report of S. Ya. Fronkov, on the problem of phase transformations arising as a result of deformation and their influence on the conditions and regime of flow of polymeric systems.

In a number of reports the structure of fluid polymers and the influence of the structure on its rheological properties were discussed. Thus, A. A. Tager discussed in detail the correspondence of the structure and viscosity of solutions of polymers. The report of S. P. Rakhov and co-authors presented the results of study of the rheological properties of anisotropic solutions of rigid-chain polymers which can form a liquid crystalline phase. Possible models of liquid crystals were examined by L. G. Smirnova and a hydrodynamic theory of their behavior was proposed by B. I. Arzhikov and A. N. Polyakin. Structural problems connected with the liquid crystalline order were presented in survey form by I. G. Chistyakov, and the application of those concepts to the description of the intra- and submolecular liquid crystalline order was examined in the report of V. N. Tsvetkov and co-authors.

Also related to problems of polymer physics was the report of D. Zhdanov (Ural), who told about new results obtained by him in the theory of polymeric lattices. V. B.

S. L. Vilenkin described the general methodology and problematics of extraction of free radicals in solutions of polymers.

The traditionally most attention was given to a examination of the results of study of the rheological properties of solutions, lattices and dispersions of polymers. In his report A. V. Malakhov generalized the results achieved in the description of the concentration dependences of various mechanical properties of polymers in the entire region of compositions and cited general (relaxation and thermodynamic) explanations of the reasons for the influence of the nature of the solvent on the viscosity and elasticity of solutions of polymers. V. V. Tikhonov and A. V. Chalikh presented a comparison of the viscoelastic properties of solutions of polybutadiene of different solvents and different molecular weight in different solvents, and also the micro- and macraviscosities of those systems.

A promising method of studying polymeric systems in a broad range of temperatures and relaxation transitions, based on measurements of the dynamic properties of the polymers (the moduli of elasticity and mechanical losses), has recently become very widespread. That direction of investigation was represented in the reports of Yu. G. Yeremukhin on the results of study of the dynamic properties of linear polymers during variation not only of the frequency but also of the amplitude of action of Yu. A. Sidorovich, G. N. Pavlyuk and A. I. Sharay on the influences of use of the dynamic method to investigate mixtures of polymers of different molecular weight, of S. R. Abrikosov and V. V. Yeremukhin on new methods of investigating the dynamic properties of soft polymers, etc. The dynamic method also is used to measure normal stresses during the periodic shearing strain of a fusion. This methodically very complex direction was represented by the report of A. I. Aniksevich and L. A. Finkel'son. The question, of principal importance, of the propagation of vibrations in thixotropic (that is, varying their properties under the effect of those vibrations) media was analyzed by L. P. Bragadis.

Interest was aroused by reports on the investigation of the rheological properties of technologically important polymeric materials -- polyethylenes, high-impact polystyrene, polyformaldehyde, and plasticized polyvinyl chloride. V. A. Vorotnikov, A. S. Uvarzhikin and I. I. Solntsev described the effect of cross-linking agents on the viscosity of polyamides.

The themes of a number of reports dealt with rheological problems in the processing of polymeric materials and the solution of hydrodynamic problems relating to that theme, which is connected with considering rheology as the theoretical basis of

USSR

UDC 621.314.58(088.8)

DOVGANYUK, I. YA., STRYUTSKOV, V. K. [VNII elektroenerg.--All-Union Scientific-
Research Institute Of Electrical Power]

"Device For Control Of Direct Frequency Converter Using Symistors"

USSR Author's Certificate No 265261, filed 26 Apr 68, published 23 June 70
(from RZh--Elektronika i yeye primeneniye, No 3, March 1971, Abstract No
3B592P)

Translation: A device is proposed for indication of the blocked state of symistors, which gives a signal to a control circuit during reverse of the converter. The indication device consists of two toroidal transformers, the primary windings of which are connected in series and connected into the network between the common point of the power electrodes of the symistors and the common point of the RC-circuit connected to the other power electrodes of the symistors. 2 ill. A.S.

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USSR

UDC: 621.503.53

BATURINSKAYA, O. V., STRYUTSKOV, V. K., All-Union Scientific Research Institute
of Electrical Power Engineering

"An Electromechanical Tracking System"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki. No 11,
1970, Author's Certificate No 266015, filed 3 Jan 69, p 54

Abstract: This author's certificate introduces an electromechanical tracking system which contains a selsyn, a phase-shifting device, thyristors, a thyristor control unit with amplifiers and a transformer, and a DC motor with a speed reducer. As a distinguishing feature of the patent, the motor efficiency is increased and the operating precision of the system is improved by incorporating two shaper diodes and three shaper amplifiers in the thyristor control unit. The input circuits of two of the shaper amplifiers are connected to an AC voltage source through a transformer in which the secondary has a grounded centertap. The outputs of these two shaper amplifiers are connected through the corresponding shaper diodes and output amplifiers to the control electrodes of the thyristors which are connected in the arms of the motor excitation winding. The input of the third shaper amplifier is connected to the output of the phase shifter, and the output is connected to the second inputs of the shaper diodes.

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1/2 025

TITLE--ON THE PHENOMENOLOGICAL THEORY OF SUPERFLUIDITY OF HELIUM NEAR THE
LAMBDA POINT -U-
AUTHOR-(02)-SLYUSAREV, V.A., STRZHEMECHNYY, M.A.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58,
NR 5, PP 1757-1764
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--HELIUM, LIQUID HELIUM, SUPERFLUIDITY, MATHEMATIC EXPRESSION,
PHASE TRANSITION, DIFFERENTIAL EQUATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3001/2233

CIRC ACCESSION NO--AP0127595

STEP NO--UR/0056/70/058/005/1757/1764

UNCLASSIFIED

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CIRC ACCESSION NO--AP0127595

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EQUATIONS DESCRIBING THE BEHAVIOR OF THE ORDER PARAMETER PHI IN SUPERFLUID HELIUM NEAR THE LAMBDA POINT ARE INVESTIGATED BY SCALING METHODS IN THE THEORY OF PHASE TRANSITIONS. RESTRICTIONS IMPOSED ON THE FORM OF THE EQUATIONS ARE FOUND. IT IS SHOWN THAT THE DIFFERENTIAL EQUATIONS FOR PHI ARE VALID ONLY FOR SOME CERTAIN VALUES OF THE CRITICAL PARAMETERS.

FACILITY:

AKADEMII NAUK

UKRAINSKOY SSR.

UNCLASSIFIED

UDC: 66.076.001.12+002.2

USSR

BOGDANOV, S. V., PANAZDYR', V. V., SIKIRYAVYY, V. Ya., SUBBOTOVSKIY, D. Kh.,
SHEMARIN, V. N.

"Selection of Design and Thermal Insulation of Covers for Underground Com-
pressed Gas Containers"

Moscow, Stroitel'stvo truboprovodov, No. 8, 1972, pp 16-18

Abstract: Underground isothermal containers for storage of compressed methane
may use various structural versions of covers. The two most frequently
encountered in world practice, the spherical cover and the standard roof with
sealing base, are studied in this article. Analysis shows that the standard
roofing with sealing base is more economical than the spherical roofing, due
largely to the lower capital investments required. Comparison of two types of
insulation of this cover indicate that they are equally economical.

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USSR

UDC 669.295:538.221

BELOVA, V. M., NIKOLAYEV, V. I., and STUCHEBNIKOV, V. M., Moscow State University imeni M. V. Lomonosov

"On Superparamagnetism of Highly Coercive Ticonal-Type Alloys"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 34, No 2, Aug 72, pp 646-649

Abstract: Results of an experimental investigation of the magnetic properties of Ticonal-type alloys -- YuNDK35T5 (single crystal), YuNDK38T8 and YuNDK35T5 (polycrystal) -- are discussed. The temperature dependence of specific magnetization in different external magnetic fields and the magnitude of superparamagnetic contribution δ_{SP} to the specific magnetization are discussed by reference to diagrams. The usual type of Langevin model qualitatively describes the most characteristic experimental dependences of the magnetic moment, confirming the presence of superparamagnetic properties in dispersion hardening alloys of the Fe-Ni-Co-Al-Ti system. Two figures, one table, two formulas, eight bibliographic references.

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USSR

UDC 621.315.592

KYUREGYAN, A. S., LAZAREVA, I. K., STUCHEBNIKOV, V. M., YUNOVICH, A. E.

"Photoluminescence of Gallium Antimonide at a High Excitation Level"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 2, 1972, pp 242-247

Abstract: The radiation recombination in GaSb under laser excitation was investigated. With an increase in the excitation power to 10^3 - 10^5 watts/cm 2 , new shortwave bands appear in the spectra. The width of the forbidden band of GaSb defined by the peak energy of the interband (exciton) radiation is 0.813 ± 0.003 electron volts at 12° K and 0.800 ± 0.005 electron volts at 80° K. In the case of weak alloying of the GaSb with tellurium, recombination occurs in the spectra with the participation of natural acceptors (0.034 and 0.070 electron volts), deep acceptors (0.10 and 0.13 electron volts) and a shallow donor (0.01 electron volts). The effect of the temperature variation, degree of alloying and excitation level on the form of the photoluminescent spectra is discussed. The results are compared with data obtained by one of the authors [V. M. Stuchebnikov, Author's Review of Candidates Dissertation of Moscow State University, Moscow, 1969] for a comparatively low excitation level by a He-Ne-laser.

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1/2 022 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--CORRELATION OF THE VOLTAGE CURRENT CHARACTERISTICS OF GALLIUM
ANTIMONIDE TUNNEL DIODES WITH THE BAND STRUCTURES -U-
AUTHOR--STUCHERNIKOV, V.M.

COUNTRY OF INFO--USSR *S.*

SOURCE--FIZ. TEKH. POLUPROV. 1970, 4(3), 581-4

DATE PUBLISHED-----70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., PHYSICS

TOPIC TAGS--VOLT AMPERE CHARACTERISTIC, GALLIUM ANTIMONIDE, TUNNEL DIODE

CONTROL MARKING--NO RESTRICTIONS,

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0499

STEP NO--UR/0449/70/004/003/0581/0584

CIRC ACCESSION NO--AP012II73

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0121173

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CORRELATION OF THE E-I CHARACTERISTICS OF GASB TUNNEL DIODES WITH THE ENERGY SPECTRUM OF GASB WAS INVESTIGATED BY USING PREVIOUSLY REPORTED RESULTS. CALCNS. FOR THE CASE OF SIMPLE PARABOLIC BANDS SHOW THE SHAPE OF THE CHARACTERISTICS AS $I_{(SUBE)} = A \exp(-BE)$, WHERE A AND B ARE CONSTS. DEPENDING ON THE SEMICONDUCTOR PARAMETERS AND IMPURITY DISTRIBUTION AT THE RHO-ETA JUNCTION. DEVIATIONS FROM THE EQUATION ARE DUE TO THE PRESENCE OF EXTREMES IN THE ENERGY BANDS. EXPTL. CURVES OF LOG I-E VS. E SHOW 2 OR 3 RECTILINEAR REGIONS, THE INTERSECTION POINTS BEING E SUB1 AND E SUB2. VOLTAGE E SUB1 DEPENDS ONLY ON THE ORIGINAL ETA TYPE MATERIAL AND DOES NOT DEPEND ON THE CONDITIONS OF DIODE PREPN., WHICH AFFECTS THE SLOPE OF THE CURVES. THE VALUES OF E SUB1 SATISFY THE THEORETICAL FORMULA QE SUB1 EQUALS DELTA L SUB1 MINUS F SUBN, WHERE DELTA L SUB1 IS THE ENERGY FROM THE BOTTOM OF CONDUCTION BAND TO THE BOTTOM OF (111) NEGATIVE MIN. AND F SUBN IS THE FERMI LEVEL IN THE ETA REGION OF THE JUNCTION. THUS, THE EFFECT OF (111) NEGATIVE MIN ON TUNNEL JUNCTIONS IN GASB IS PROVED. VOLTAGE E SUB2 (OCCURRING AT LOW TEMPS.) IS NOT A FUNCTION OF THE DEGREE OF DEGENERATION OF THE RHO REGION AS WELL AS THE E SUB1 BUT THE VALUE DELTA L SUB2 EQUALS QE SUB2 PLUS F SUBN DECREASES WITH INCREASES OF THE ELECTRON CONCN. IN THE ETA REGION. ENERGY DELTA L SUB2 WAS ASSUMED TO CORRESPOND TO THE TE-LEVEL ASSOC'D. WITH THE (100) MINUS MIN. FACILITY: MOSK. GOS. UNIV. IM. LOMONSOVA, MOSCOW, USSR.

UNCLASSIFIED

Semiconductors and Transistors

USSR

UDC: 537.533.8

AFONINA, L. F., KLIMIN, A. I., STUCHINSKIY, G. B.

"Secondary Electron Emitter Based on Gallium Arsenide With Reduced Electron Affinity"

Elektron. tekhnika. Nauchno-tekh. sb. Elektronnoluch. i fotoelektr. pribory (Electronic Technology. Scientific and Technical Collection. Electron Beam and Photoelectric Devices), 1970, vyp. 4(18), pp 64-65 (from RZh-Elektronika i yeye Primeneniye, No 6, Jun 71, Abstract No 6A195)

Translation: A zinc-doped GaAs crystal with carrier concentration of $1.5 \cdot 10^{19}/\text{cc}$ was cut along face $\{110\}$ in a vacuum of $\sim 5 \cdot 10^{-9}$ mm Hg. In the process of subsequent treatment of the cut surface in cesium vapor and in oxygen admitted up to a pressure of $2-3 \cdot 10^{-7}$ mm Hg, the value of the coefficient of secondary electron emission σ was continually observed for a primary electron energy $E_p = 900$ eV. The greatest value determined for σ was 47. A curve is given for $\sigma(E_p)$ determined after sealing off the cesium source (when $E_p = 200$ eV, $\sigma = 15$, when $E_p = 900$ eV, $\sigma = 40$, when $E_p = 1600$ eV, $\sigma = 60$). The results are compared with published data (see IEEE Trans. Nucl. Sci., 1968, 15, No 3, p 167) on GaP. One illustration, bibliography of three titles. N. S.

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1/2 022 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--INELASTIC REFLECTION OF ELECTRONS FROM CS SUB3 SB AND (CS)NA SUB2.

KSB EMITTERS -U-

AUTHOR--STUCHINSKIY, G.B.

COUNTRY OF INFO--USSR

SOURCE--RADIOTEKH. ELEKTRON. 1970, 15(2), 410-11

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ELECTRON Emitter, ELECTRON ENERGY, ELECTRON REFLECTION, CESTUM COMPOUND, SODIUM COMPOUND, POTASSIUM COMPOUND, ANTIMONY COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1984/0669

STEP NO--UR/0109/70/015/002/0410/0411

CIRC ACCESSION NO--AP0055372

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0055372

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE COEFF. OF INELASTIC REFLECTION OF ELECTRONS, ETA, WAS MEASURED FOR SB ALKALI EMITTERS OF SECONDARY ELECTRONS. THE DEPENDENCES ETA (E SUBP) FOR PRIMARY ELECTRON ENERGIES OF E SUBP EQUALS 0.1-3 KEV WERE FOUND. AS E SUBP INCREASES, ETA INCREASES SMOOTHLY UP TO 1-1.5 KEV, AFTER WHICH SATN. OCCURS.

UNCLASSIFIED

USSR

UDC 621.385.832:621.397.61

RAKHMETULOV, YU. K., STUCHINSKIY, G. E.

"A Television Transmitting Tube with Scanning by a Beam of Slow Electrons"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obrantzy, Tovarnyye Znaki,
No 23, 1970, Author's Certificate No 273840, Filed 17 Jan 69, pp 227-228

Abstract: This author's certificate introduces: 1. A television transmitting tube with scanning by a beam of slow electrons. On the inner surface of the inlet aperture of the tube is a target made in the form of a layer of dielectric material with porosity of 90-99 percent and N-type conductivity into the vacuum pores. This layer is located on the signal plate. Also incorporated in the tube is an electron gun. As a distinguishing feature of the patent, the tube is designed to combine high impedance with high sensitivity in the visible, infrared, ultraviolet or x-ray spectral regions. The layer of dielectric material, and especially the part which is turned toward the electron gun, contains at least one additional material which has photoemissivity in the required spectral region. 2. The distinguishing feature of the above tube is that the photoemissive material has a grainy structure. 3. A modification of this tube (No 2) in which the distinguishing feature is that the photoemissive material is made up of grains located
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USSR

RAKHMETULOV, YU. K., et al., Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 23, 1970, Author's Certificate No 273840, Filed 17 Jan 69, pp 227-228

on the surface of the dielectric layer. 4. A modification of this tube (No 2) in which the distinguishing feature is that the grains of photoemissive material are distributed within the body of the layer of dielectric material. 5. A modification of this tube (No 2) in which the distinguishing feature is that the grains of photoemissive material form an interlayer within the layer of dielectric material. 6. A modification of this tube (No 1) in which the distinguishing feature is that the layer of photoemissive material has the structure of thin films. 7. A modification of this tube (No 7) in which the distinguishing feature is that the thin films are located over the surface of the grains of the layer of dielectric material.

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1/2 012 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--HYGROSCOPIC NATURE, CAKING TENDENCY, AND DEGREE OF DISPERSION OF
AMMONIUM SULFATE -U-
AUTHOR--(03)-PETRENKO, D.S., STUCHKOV, G.S., NELIPA, O.G.

COUNTRY OF INFO--USSR *S*

SOURCE--KHIM. PROM. UKR. 1970, (1), P 13

DATE PUBLISHED----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--AMMONIUM SULFATE, CRYSTAL STRUCTURE, HYGROSCOPIC WATER,
PROTECTIVE PACKAGING, WATERPROOF PACKAGING MATERIAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1990/1459

STEP NO--UR/0436/70/000/001/0013/0013

CIRC ACCESSION NO--AP0109519

UNCLASSIFIED

2/2 012

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--APO109519

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RELATION OF THE CAKING TENDENCY TO THE DEGREE OF DISPERSION OF (NH SUB4) SUB2 SO SUB4 WAS DETERMINED. THE GRANULAR FORM IS PREFERRED TO THE CRYST. THE CAKING TENDENCY INCREASES WITH THE FINENESS OF (NH SUB4) SUB2 SO SUB4. WHEN STORED FOR 33-63 DAYS IN MOISTURE PROOF SACKS THE DISPERSIVITY OF (NH SUB4) SUB2 SO SUB4 WAS NOT IMPAIRED. SINCE THE AGROPHYS. PROPERTIES OF (NH SUB4) SUB2 SO SUB4 DEPEND SO MUCH ON THE MOISTURE CONTENT, IT IS RECOMMENDED THAT THE MOISTURE CONTENT SHALL NOT EXCEED 0.3PERCENT AND THE AMT. OF FREE ACID SHOULD BE BELOW 0.04PERCENT. A HIGHER AMT. OF ACID ENHANCES THE HYGROSCOPIC PROPERTY OF (NH SUB4) SUB2 SO SUB4 CONSIDERABLY AND MAKES IT MORE DIFFICULT TO HANDLE.

UNCLASSIFIED

USSR

UDC 612.821.14

SUDAKOV, K. V., Department of Normal Physiology, First Moscow Medical Institute imeni Sechenov

"Neurophysiological Mechanisms of Emotional Stress and Their Role in the Genesis of Arterial Hypertension"

Yerevan, Biologicheskiy Zhurnal Armenii, Vol 25, No 6-7, Jun/Jul 72,
pp 167-177

Abstract: On the basis of his own work and a literature review the author establishes that hypertension stems from a dominance of vasodepressor signals in the hypothalamus over vasopressor signals from vascular baroreceptors with respect to amplitude and duration. Under normal conditions vasopressor signals cause an immediate adaptation to changed internal conditions, but continuous exogenous emotional stress (produced by conflicting situations or experimentally by brain electrode implantation) and endogenous emotional stress (internal -- congenital disruptions of hypothalamic-hypophyseal interaction, renal circulation, etc., and external -- heightened cholesterol, etc. in food, physical overloads, etc.) prolongs the effects of vasodepressor signals. After brief stimulation of the ventromedial nucleus of the hypothalamus in rabbits by electrodes, brain (limbic) electrical activity persists longer than required for vasodepressor mechanisms to normalize arterial pressure. Subsequent
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USSR

SUDAKOV, K. V., Biologicheskiy Zhurnal Armenii, Vol 25, No 6-7, Jun/Jul 72,
pp 167-177

experiments showed that persistence of vasodepressor signals is the result of prolonged circulation of stimuli through cortical-subcortical structures. For example, experimental electric blockage of limbic structures decreases the amplitude and duration, or at least the amplitude, of raised arterial pressure persisting after hypothalamic stimulation. On the other hand, joint stimulation of both the hypothalamus and the limbic structures causes the amplitude and duration to be greater than with hypothalamic stimulation alone. Furthermore the finding that threshold depressor effects are always stronger than threshold pressor effects in the medulla oblongata supports the suggestion that in a conflict between vasodepression and vasopression the former dominates.

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STUDENIKIN, M. Ya.

Medical Sciences

SCHEDULE FOR SCHOOL CHILDREN SUFFERING FROM CHRONIC DISEASE

[Articles by M. Ya. Studenikin, Institute of Pediatrics, USSR Academy of Medical Sciences, Moscow, October, 1972, pp. 42-47]

USSR: 010-356-2264, Series

In our country, workers in medical and pedagogic institutions, for whom performing their professional, human, social functions requires little time and no instrumental means, in upbringing and educating the younger generation, are they lay the foundation for an active, useful, and long life.

To raise a physically and mentally perfect, healthy, and long-lived generation is the ultimate goal of patients', physicians', and pedagogues. Of course, education is also directed toward this chief objective, as defined in the Program of the CPSU.

But what is a physically healthy, really strong, and handsome man?

Life constantly shows us that each new generation of society is better, "as if stretching ahead and higher." Consequently, the requirements of health, physical and mental development, upbringing and education are progressively increasing. We believe it is opportune to quote here the progressive statement of Schiller's "Die minne vor die Natur gesetzten that we can no longer return to the generation that has left the stage."

But it would not be news to anyone to say that it is easier to educate and raise a healthy child. He forms more readily all the necessary skills and habits. He adjusts better to changing conditions, he develops better skills of proper formation of character, initiative, will power, development of talents and natural abilities.

On the basis of the foregoing, the problem of the joint action of medical scientists, pedagogues, biologists and others concerning "Health and School," should be considered quite timely and opportune.

USSR

UDC: 621.317.616

ROYTMAN, M. S., STUDENIKIN, V. N.

"On the Possibility of Using Phase Relationships to Evaluate the Frequency Error of Symmetric Attenuation Boxes"

Izv. Tomsk. politekhn. in-ta (News of Tomsk Polytechnical Institute), 1970,
184, pp 85-90 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11A320)

Translation: The paper points out the difficulties which arise in measuring the frequency error of attenuation boxes. These devices may be classified as minimum phase circuits for which there is a single-valued phase relationship between the phase and frequency characteristics. A brief theoretical basis is given as well as a procedure for studying the phase and frequency characteristics of attenuation boxes. On the basis of the results, the authors conclude that phase relationships may be used for determining the frequency error of attenuation boxes for frequencies of no more than 150 kHz, since the phase characteristics in this range are steeper than the frequency characteristics. For higher frequencies, it is simpler to evaluate errors from the frequency characteristic. Bibliography of four titles. E. L.

1/1

- 121 -

USSR

S UDC: 621.317.089.6

STUDENIKIN, V. N.

"On the Problem of Frequency Error in Symmetric Calibrated Links"

Tr. Khabarovskogo politekhn. in-ta (Works of the Khabarovsk Polytechnical Institute), 1968, vyp. 13, pp 332-345 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7A179)

Translation: Theoretical and experimental research is done on symmetric calibrated links for attenuation boxes in the frequency range of up to 5 MHz. It is shown that the capacitance of the shield and susceptances has the least effect when the links are made with an attenuation of 2-3 nepers; a frequency-independent voltage divider may be obtained in the given frequency range for certain ratios between these susceptances.

1/1

USSR

ROYTMAN, M. S., STUDENIKIN, V. N.

S
UDC: 621.317.3⁴

"On the Problem of Using Phase Relationships for the Frequency Error of Symmetric Attenuation Boxes"

Tr. Khabarovskogo politekhn. in-ta (Works of the Khabarovsk Polytechnical Institute),
1968, vyp. 13, pp 321-331 (from RZh-Radiotekhnika, No 7, Jul 70, Abstract No 7A191)

Translation: The paper gives the theoretical substantiation and an experimental method of studying the frequency error of symmetric attenuation boxes. The frequency response and phase characteristics were taken. The results of the study are given. For frequencies below a certain limit (150 kHz in the specific example) phase relationships may be used for checking the frequency error; at higher frequencies it is simpler to estimate from the amplitude-frequency characteristics. E. L.

1/1

USSR

S UDC: 621.317.77

KRAMNYUK, A. I., STUDENIKIN, V. N.

"A Simple Circuit for Indicating a Phase Shift of 90°"

Izv. Tomskogo politekhn. in-ta (News of Tomsk Polytechnical Institute), 1969, 171,
pp 73-76 (from RZh-Radiotekhnika, No 6, Jun 70; Abstract No 6A385)

Translation: An indicator circuit based on RC elements is described. As a distinguishing feature of the device, the voltages to be tested are fed to the measurement circuit through identical matching amplifiers (such as cathode followers) with low output impedance. The amplitudes of the input voltages should preferably be equal to improve accuracy of indication. Four illustrations, bibliography of one title. N. S.

1/1

1/2 022

UNCLASSIFIED

PROCESSING DATE--18SEP70

TITLE--UNSTEADY PROCESSES IN HOMOPOLAR APPARATUS -U-

AUTHOR--(03)--DROBYSHEVSKIY, E.M., STUDENKOV, A.M., PEKNYY, L.A.

COUNTRY OF INFO--USSR

SOURCE--ZH. TEKH. FIZ. 1970, 40(2), 346-54

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PLASMA DIFFUSION, MAGNETIC FIELD, PLASMA DISCHARGE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1979/1602

STEP NO--UR/0057/70/040/002/0346/0354

CIRC ACCESSION NO--AP0047924

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0047924

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE CHARACTERISTIC PHASES OF THE DISCHARGE AT LOW CURRENTS (1-4A) WERE STUDIED, AND A RELATION BETWEEN THE V-A CHARACTERISTICS AND THE DISCHARGE SPACE WAS POINTED OUT. IN THE INITIAL PHASE, 2 DISTINCT PROCESSES ARE CONNECTED WITH THE ANISOTROPY OF PLASMA DIFFUSION IN A MAGNETIC FIELD. A SIMPLE THEORETICAL MODEL WAS DERIVED FOR THE STEADY IONIZATION DIFFUSION EQUIL. THE EFFECT OF IMPURITIES ON THE APPEARANCE OF UNSTEADY PROCESSES IS DISCUSSED.

UNCLASSIFIED

STUDENOK, Yu. A.

TECHNICAL TRANSLATION

FSTC-ET-23-779-71

ENGLISH TITLE: The Effect of the Rate of Previous Deformations on Energy Absorption in the Compression of Copper

FOREIGN TITLE: Vliyanie Skorosti Prevariteli'noy Deformatsii na Pogloshcheniye Energii pri Sazhatii Merti

AUTHOR:

Yu. A. Studenok

SOURCE:

Journal of Technical Physics, Vol XX, no 4

Translated for FSTC by Lee Kanner Associates

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1/2 022

UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--HOVERCRAFT GOR'KOVCHANIN -U-

AUTHOR--STUDENSKIY, S.

COUNTRY OF INFO--USSR

SOURCE--VODNYY TRANSPORT, AUGUST 25, 1970, P 1, COL 7

DATE PUBLISHED--25AUG70

SUBJECT AREAS--AERONAUTICS

TOPIC TAGS--HOVERCRAFT, AIRCRAFT PRODUCTION/(U)GOR'KOVCHANIN HOVERCRAFT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3008/1639

STEP NO--UR/9028/70/000/000/0001/0001

CIRC ACCESSION NO--AN0138615

UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--ANO138615

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ASTRAKHAN REPAIRS AND SERVICE
BASE OF THE FLEET IMENI URITSKIY, ASTRAKHANSKAYA
REMONTNO-EKSPLUATATSIONNAYA BAZA FLOTA, HAS OBTAINED AN ORDER FOR THE
CONSTRUCTION OF THE "GOR-KOVCHANIN" TYPE HOVERCRAFT. THE ERECTION OF A
SPECIAL WAY HAS BEEN STARTED.

UNCLASSIFIED

USSR

UDC 621.317.4

AFANAS'YEV, Yu. V., STUDENTsOV, N. V., and ShchELKIN, A. P.

"Magnetometric Converters, Instruments, and Assemblies"

Magnitometricheskiye Preobrazovateli Pribory, Ustanovki (cf. English above),
Leningrad, Energiya, 1972, 272 pp, illustrated, 1 ruble 18 kopecks (from
RZh-Avtomatika Telemechanika i Vychislitel'naya Tekhnika, No 3, Mar 73, Abstract
No. 3 A295K by the authors)

Translation: The book is devoted to the theory and practice of modern means of measuring magnetic induction. The principles of operation, basic parameters, and characteristics of magnetometric converters of various types are examined. A description is given of the circuits and design of instruments using these converters. Attention is given to minimizing the distortions of converters and instruments, and a method and apparatus are described for determining the individual distortions of the instruments.

1/1

1/2 013 UNCLASSIFIED PROCESSING DATE--27NOV70
TITLE--MILITARY ENGINEERS HAVE BEEN GRADUATED +U-

AUTHOR--STUDENTSOV, YU.

COUNTRY OF INFO--USSR

SOURCE--KRSNAYA ZVEZDA, JULY 7, 1970, P 2, COL 7

DATE PUBLISHED--07JUL70

SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES

TOPIC TAGS--MILITARY SCHOOL, OFFICER PERSONNEL, MILITARY ENGINEER TRAINING, NONECONOMIC INCENTIVE, STUDENT GRADUATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/0666

STEP NO--UR/9008/70/000/000/0002/0002

CIRC ACCESSION NO--AN0116239

UNCLASSIFIED

2/2 013

CIRC ACCESSION NO--AN0116239

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE HIGHER MILITARY ENGINEERING
TECHNICAL SCHOOL HAS GRADUATED IT 1970 CLASS OF MILITARY ENGINEERS.
OFFICERS L. KEYKO AND R. TONKA HAVE GRADUATED WITH HONORS. STUDENTS N.
NEODOBOROVSKIY AND N. SIROTKIN HAVE BEEN AWARDED GOLD MEDALS. LIEUTENANT
COLONEL I. DENISENKO, A CORRESPONDING STUDENT, ALSO GRADUATED WITH
HONORS.

UNCLASSIFIED

USSR

ORBAN, YU. M. and STUDNEV, YU. P.

"Ariy and Fresnel Functions as Limiting Rules for Convolutions of Functions of Limited Variation"

Ukr. Mat. Zh. [Ukrainian Mathematics Journal], 1973, 25, No 3, pp 323-331 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V26)

Translation: A certain generalization of a global version of the central limit theorem from the theory of probabilities is studied. Suppose $F_n(x) = V^{*n}(x) = V(x)*...*V(x)$ ($*$ is the sign of the operation of convolution), $V(x)$ is a complex-valued function fixed in $(-\infty, \infty)$ and satisfying the conditions $V(-\infty) = 0$, $V(+\infty) = 1$, $\int |dV(x)| < +\infty$. Conditions are studied under which the functions $\phi_n(x) = F_n(B_n x)$ converge to the functions

$$K_q(x; a) = \int_{-\infty}^x k_q(z; a) dz, q = 1, 2, \dots$$

$$L_q(x; a) = \int_{-\infty}^x l_q(z; a) dz, q = 1, 2, \dots$$

1/2

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USSR

ORBAN, YU. M. and STUDNEV, YU. P., Ykr. Mat. Zh., 1973, 25, No 3, pp
323-331

where

$$k_q(x; a) = \frac{1}{2\pi} \int_{-\infty}^{\infty} \exp \left\{ -itx + \frac{(it)^{2q+1}}{(2q+1)!} a \right\} dt, q=1, 2, \dots,$$

$$l_q(x; a) = \frac{1}{2\pi} \int_{-\infty}^{\infty} \exp \left\{ -itx + i \frac{t^{2q}}{(2q)!} a \right\} dt, q=1, 2, \dots,$$

while a is a real number.

Author's view

2/2

USSR

UDC 614.35+615.28.099⁷:632.95

STUNYEVA, G. I., I. P. Pavlov Ryazan' Medical Institute

"Sanitary-Hygienic Conditions of Use and Toxicity of a Mixture of Celtane,
Chlorophos, and Copper Oxychloride"

Moscow, Gigiyena i Sanitariya, No 8, 1973, pp 101-103

Abstract: A mixture of celtane, chlorophos, and copper oxychloride is used in Ryazan' Oblast to protect fruit trees against various insects and diseases. The trees are sprayed several times a season. Biochemical tests of 152 persons handling the compounds (tractor drivers, those mixing the ingredients, individuals checking on the trees) showed varying degrees of change in blood morphology -- erythropenia, neutropenia, leukopenia, decrease in hemoglobin concentration -- and lowered cholinesterase activity. The individuals preparing the mixture suffered from headaches, nausea, weakness, and excessive lacrimation. Fumes were present in toxic concentrations in the work area and in the cabins of the tractors engaged in spraying. It is recommended that the cabins be airconditioned and that the process of preparing the solutions be mechanized.

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USSR

UDC 547.27+547.562

FOKIN, A. V., KOLOMIYETS, A. F., SHCHENNIKOV, V. S., and STUDNEV, Yu. N.

"Reactions of 2-Aryl(Alkyl)thioethanols With Phosphoric Acid"

Leningrad, Zhurnal Organicheskoy Khimii, Vol 7, No 7, Jul 71, pp 1406-1407

Abstract: Reacting phosphoric acid with 2-aryl and 2-alkylthioethanols in solutions produces good yields of respective simple ethers. A mixture of 0.1 g-mole of aryl or alkylthioethanol, 50 ml toluene or xylene, and 0.5 g of anhydrous phosphoric acid is refluxed under a Dean-Stark trap as long as water is being produced. The reaction mixture is then cooled, dissolved in 50 ml benzene, washed with sodium carbonate until neutral, dried and vacuum distilled to yield the desired products.

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172 013 UNCLASSIFIED

PROCESSING DATE--ZUNOV70

TITLE--REACTIONS OF 4,TRIFLUOROMETHYLAZO,4 PRIME,AMINOBIPHENYL -U-

AUTHOR--(OS)--ZIPIN, V.I., RYULINA, A.I., SULTANBEKJYV, D.A., BARYSHEVA,
I.I., STUONEV, YU.N.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHM. 1970, 6(4), 812-15

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--FLUORINATED ORGANIC COMPOUND, BENZENE DERIVATIVE, ORGANIC AZO
COMPOUND, DYE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3006/1276

STEP NO--UR/0366/70/006/004/0812/0815

CIRC ACCESSION NO--APIO134950

UNCLASSIFIED

272 015 UNCLASSIFIED PROCESSING DATE--20NOV70
CIRC ACCESSION NO--AP0134950

ABSTRACT/EXTRACT--(U) GP-C ABSTRACT. COUPLING DIAZOTIZED P,F SUB3 CN:NC
SUB6 H SUB4 C SUB6 NH SUB2 (I) WITH 2,C SUB10 H SUB7 NH SUB2, N,C SUB6 H
SUB4 (NH SUB2) SUB2, N,C SUB6 H SUB4 (DH) SUB2, 2,C SUB10 H SUB7 DH,
1,3,INDANDICNE, AZOTOL A, OR AZOTOL IIA, GAVE A SERIES OF LIGHT FAST
DYES. SIMILARLY I WAS CONDENSED WITH O,HOC SUB6 H SUB4 CHO, P,ME SUB2
NC SUB6 H SUB4 CHO, 5,2,CL(HO)C SUB6 H SUB3 CHO, 5,2,O SUB2 N(HO)C SUB6
H SUB3 CHO, 3,4,O SUB2 N(ME SUB2N)C SUB6 H SUB3 CHO, 2,1,HOC SUB10 H
SUB6 CHO, OR 4,2,PHN:N, (HO)C SUB6 H SUB3 CHO TO GIVE AZOMETHINES.

UNCLASSIFIED

1/2 027 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--REACTION OF TETRAFLUOROHYDRAZINE AND NITRIC OXIDE WITH OLEFINS -U-

AUTHOR--(04)-FOKIN, A.V., ZIMIN, V.I., STUDNEV, YU.N., KOROTKOV, V.F.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHM. 1970, 6(4), 880-1

DATE PUBLISHED----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--CONDENSATION REACTION, NITRIC OXIDE, HIGH PRESSURE EFFECT,
OLEFIN RESIN, TETRAFLUOROHYDRAZINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/2157 STEP NO--UR/0366/70/006/004/0880/0881

CIRC ACCESSION NO--APO125740

UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125740
ABSTRACT/EXTRACT--(U) GP-O ABSTRACT. CONDENSATION OF RCH:CHR PRIME1
WITH F SUB2 NNF SUB2-NO MIXT. UNDER PRESSURE GAVE A MIXT. OF F SUB2
NCHRCHR PRIME1 NF SUB2, F SUB2 NCHRCHR PRIME1 N(:O)NF, AND FCHRCHR
R PRIME1 N(:O)NF (R AND R PRIME1 GIVEN): H, H; AND H, BU. THE PRESENCE
OF NO ACCELERATES THE REACTION. WITHOUT NO THE REACTION REQUIRES
HIGHER TEMPS. AND PRESSURES.

UNCLASSIFIED

1/2 024

UNCLASSIFIED

PROCESSING DATE--23OCT70
-U-

TITLE--REACTION OF TETRAFLUOROHYDRAZINE WITH OXIMES

AUTHOR--(04)-FOKIN, A.V., ZIMIN, V.I., STUDNEV, YU.N., PONSOV, M.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (3), 719-20

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--OXIME, HYDRAZINE COMPOUND, PYRIDINE, FREON, FLUORONITRO
COMPOUND, FLUORINATED ORGANIC COMPOUND, CHEMICAL SYNTHESIS, CHEMICAL
REACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1882

STEP NO--UR/0062/70/000/003/0719/0720

CIRC ACCESSION NO--AP0123670

UNCLASSIFIED

2/2 024

CIRC ACCESSION NO--AP0123670

UNCLASSIFIED

PROCESSING DATE--23OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PASSING N SUB2 F SUB4 7-8 HR AT 80DEGREES INTO 10.6 ACETOXIME AND 8.6 G PYRIDINE IN FREON 112 GAVE AFTER TREATING THE PRODUCT WITH AQ. HCL 35PERCENT ME SUB2 C(NF SUB2) N(O): NF, B SUB30 54DEGREES, N PRIME20 SUBD, 1.3950, D PRIME20 1.325. N SUB2 F SUB4 PASSED AT 0DEGREES INTO RHO,HOC SUB6 H SUB4 NJ IN CHCL SUB3 GAVE 30PERCENT RHO,HOC SUB6 H SUB4 N(O): (NF, M. 83-4DEGREES, WHICH WITH ACCL 101DEGREES. SIMILARLY WAS PREPD. MEETC(NF SUB2) N (O):NF. ONLY IN THE PRESENCE OF PYRIDINE WAS IT POSSIBLE TO ISOLATE N FLUORO DERIVS. FROM SUCH A REACTION. WHEN N SUB2 F SUB4 WAS PASSED INTO DIMETHYLGlyoxime IN THF 4-5 HR AT 60-5DEGREES, REMOVAL OF THE SOLVENT GAVE A RATHER UNSTABLE YELLOWISH LIQ., WHICH ON BEING HEATED EVOLVED N OXIDES BUT WHOSE CHEM. COMPN. SUGGESTED THE STRUCTURE (MECN(O): NF) SUB2.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--REACTION OF TETRAFLUORODHYDRAZINE WITH UNSATURATED NITRO COMPOUNDS
-U-

AUTHOR--(04)-FOKIN, A.V., NIKOLAYEVA, A.D., STUDNEV, YU.N., PROSHIN, N.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM, 1970, (3), 717-18

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--FLUORONITRO COMPOUND, FLUORINATED ORGANIC COMPOUND, HYDRAZINE
COMPOUND, ORGANIC NITRO COMPOUND, CHEMICAL SYNTHESIS, CHEMICAL REACTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1881

STEP NO--UR/0062/T0/000/003/0717/0718

CIRC ACCESSION NO--AP0123669

UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0123669
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PASSING N SUB2 F SUB4 35 HR INTO
7.5 G 2,2,DINITRO,4,PENTENE IN MECN AT 70DEGREES UNDER N GAVE
36.4PERCENT F SUB2 NCH SUB2 CRR PRIME1 NF SUB2 (1) (R EQUALS H, R PRIME1
EQUALS CH SUB2 CME(NO SUB2) 2), B SUB0.008 46-8DEGREES, N PRIME20 SUBD
1.4512, D PRIME20 1.52. SIMILARLY WERE PREPD. THE FOLLOWING I (R AND R
PRIME1 SHOWN): H, CH SUB2 NO SUB2, B SUB0.04 470DEGREES, N PRIME20 SUBD
1.4403; ME, CH SUB2 NO SUB2, B SUB0.01 50DEGREES, 1.4780; H, CH SUB2
CF(NO SUB2) SUB2, B SUB0.1 65DEGREES 1.4416; H, CH SUB2 CH SUB2 CF(NO
SUB2) SUB2, B SUB0.003 56DEGREES, 1.4513; H, CME(NO SUB2) SUB2, B
SUB0.001 360DEGREES, 1.4380; AND ME, CH SUB2 CME(NO SUB2) SUB2, B
SUB0.001 64DEGREES, 1.4811. THE PRODUCTS WERE RATHER REACTIVE AND
UNSTABLE LWS. ONLY MINOR DECOMPNS TOOK PLACE UNDER THE ABOVE
CONDITIONS.

UNCLASSIFIED

1/2 008 UNCLASSIFIED PROCESSING DATE--11SEP70
TITLE--O'ACYLATION OF PHENOL WITH CARBOXYLIC ACIDS -U-

AUTHOR--FOKIN, A.V., KOLOMIYETS, A.F., STUDNEV, YU.N., KUZNETSOVA, L.D.

COUNTRY OF INFO--USSR

SOURCE--IZVESTIYA SIBIRSKOGO OTDELENIYA AKADEMII NAUK SSSR, NO 2, SERIYA
KHIMICHESKIH NAUK, 1970, NR 1, PP 87-90
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHENOL, CARBOXYLIC ACID, ESTER, ACYL RADICAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/1766

STEP NO--UR/0289/70/000/001/0037/0090

CIRC ACCESSION NO--AP0100346

UNCLASSIFIED

2/2, 008

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0100346

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. CARBOXYLIC ACIDS (I) ACYLA
PHENOL AND GIVE ESTERS WHEN THE REACTION IS PERFORMED AT 110-140DEGREES C
(AEOOTROPIC DISTILLATION OF WATER) IN THE PRESENCE OF HCl, 4,CH SUB3 C
SUB6 H SUB4 SO SUB3 H, H SUB2 SO SUB4 (III) OR HClO SUB4 (IV); II AND
III ARE BETTER CATALYSTS. RELATIVELY WEAKER CARBOXYLIC ACIDS ARE
STRONGER ACYLATING AGENTS. THE GREATER ACIDITY OF ACIDS RESULTS IN
SMALLER ACYLATING ABILITY. THE DATA ARE IN ACCORD WITH THE POSTULATED
INTERMEDIATE FORMATION OF ACYL CATION.

UNCLASSIFIED

USSR

UDC 519.21

STUDNEV, Yu. P.

"Theory of Limitlessly Divisible Rules in Class B.I."

Teoriya Veroyatnostey i Mat. Statist. Mezhved. Nauchn. Sb. [Theory of Probabilities and Mathematical Statistics, Interdepartmental Scientific Collection], No 2, 1970, pp 183-192 (Translated from Referativnyy Zhurnal Kibernetika, No 3, 1971, Abstract No 3 V10 by the author).

Translation: Using an elementary example from the theory of differential parabolic equations, it is demonstrated that the classical probability methods are unsuitable in certain situations. It is affirmed that a certain expansion of probability theory methods (particularly the theory of addition of random quantities using non-monotonic "distribution functions," is a more universal apparatus for studying differential equations. Results are presented which are a quasiprobabilistic analogue of certain statements from the theory of limitlessly divisible rules from the theory of probabilities. Analogues of the formulas of Levy and Kolmogorov illustrate the significant expansion of the set of limitlessly divisible rules from the theory of probabilities.

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USSR

UDC 616.5-057-084.001.5

DOLGOV, A. P., STUDNITSIN, A. A. and TURANOV, N. M., Moscow

"Current State of Scientific Research for the Control of Occupational Dermatoses"

Moscow, Vestnik Dermatologii i Venerologii, No 8, 1971, pp 3-6

Abstract: In the Soviet Union, as well as in highly industrialized countries in the West, occupational dermatoses represent 50-70% of occupational diseases. This rise in the frequency of toxicoses is due to the expanding manufacture of polymer plastics, resins, agricultural chemicals, and their numerous intermediate products. Though considerable progress has been made in the analysis and treatment of dermatoses by institutes of labor safety and hygiene, institutes of venereal diseases, and offices of occupational dermatoses, much remains to be done in that area. Offices of occupational dermatoses should be established in all industrial districts. Workers in chemical plants should be examined before employment and regularly thereafter. Chemical substances should be classified into those causing direct skin irritations and those causing sensitization. In each case, the exact mechanism of action should be elucidated, and the best equipment should be made available for this research. Methods and means of individual protection should be developed to

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USSR

DOLGOV, A. P., et al., Vestnik Dermatologii i Venerologii, No 8, 1971,
pp 3-6

prevent contact with the irritating agent and to neutralize it after contact. These means will include special garments as well as thick ointments to be applied to the skin prior to work. Criteria should be worked out to introduce a uniform evaluation of work capability or incapability of patients suffering from dermatoses.

2/2

USSR

UDC: 536.23

VARGAFTIK, N. B., VOSHCHININ, A. A., BERZHENTSEV, V. V., STUDNIKOV, Ye. L.,
Moscow Aviation Institute imeni S. Ordzhonikidze

"Experimental Determination of the Thermal Conductivity of Sodium Vapor"

Moscow, Teplofizika Vysokikh Temperatur, Vol 11, No 2, Mar/Apr 73, pp
422-423

Abstract: A previous paper (Vargaftik, N. B., Voshchinin, A. A., Teplofizika Vysokikh Temperatur, Vol 5, No 5, 1967) gave the results of measurements of the thermal conductivity of sodium vapor by the method of coaxial cylinders. In these experiments, the fraction of radiant heat transfer was 20-40%. To reduce the percentage of radiation, the authors of this paper made a new installation with a working gap of 0.2 mm instead of the 0.6 mm used in the previous research. The measurements were made at 1095 K and 2000-50000 N/m². In spite of the relatively low pressures, the concentration of diatomic molecules varied considerably (from 1 to 10%). The thermal effects of the reaction were considerable, affecting both the thermal conductivity and the effective heat capacity. The results of the experiments are tabulated. The experimental error is about 6%. It is

1/2

• USSR

VARGAFTIK, N. B. et al., Teplofizika Vysokikh Temperatur, Vol 11, No 2,
Mar/Apr 73, pp 422-423

found that at about 1100 K (the principal isotherm) the ratio of thermal conductivities of sodium vapor at 50000 and 10000 N/m² is about 1.30, which agrees well with data in the literature obtained by another method.

2/2

- 50 -

USSR

UDC 615.859:615.84

STUDNITSYNA, L. A., Candidate of Medical Sciences, Central Scientific
Institute of Resort Therapy and Physiotherapy, Ministry of Health USSR

"Electrosleep as a Therapeutic Factor. Method and Indications"

Moscow, Meditsinskaya Sestra, No 5, 1972, pp 32-34

Abstract: Electrosleep can be used in the treatment of autonomic endocrine functional disorders, functional disorders of the central nervous system, hypertension and hypotension, neurasthenia, atherosclerosis, heart disorders due to neuroses, stomach and duodenal ulcers, certain diseases of the joints, menstrual functional disorders, etc. Rectangular pulses (5-100 Hz., pulse duration 0.5-2.0 msec., peak current amplitude 5-8 ma applied to the patient's eyes (neg.) and mastoid process (pos.) through probes induce a genetic rhythmic stimulus on the nerve ends of the sockets and lids of the eyes. Initially treatments are brief, 10-15 min., with pulse frequency 5-10 Hz. Subsequent treatments may be gradually extended. Pulse frequency and amplitude depend on the nature of the illness. Massage, therapeutic gymnastics, sedatives, etc., may be used concurrently. Contraindications to the application of electrosleep are: acute inflammatory illnesses of the eyes, peeling of the retina, cataracts, expressed atherosclerosis of brain vessels, brain circulatory disturbances, pronounced coronary atherosclerosis with frequent

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JSSR

STUDNITSYNA, L. A., Meditsinskaya Sestra, No 5, 1972, pp 32-34

stenocardia attacks, arachnoiditis of the brain. Application of electrosleep in glaucoma cases is being studied. Thyrotoxicosis patients withstand electro-sleep therapy poorly.

2/2

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1/2 009

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--PHOTOCHEMICAL DESULFURIZATION OF AROMATIC SULFONIC ACIDS -U-

AUTHOR--(05)-YELTSOV, A.V., STUDZINSKIY, O.P., KULBITSKAYA, O.V.,
OGOLTSOVA, N.V., EFROS, L.S.

COUNTRY OF INFO--USSR

SOURCE--ZH. ORG. KHIM. 1970, 6(3), 638-9

DATE PUBLISHED-----70

S

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--NAPHTHALENE, AMINE DERIVATIVE, QUINONE, SULFONIC ACID, ORGANIC
SULFUR COMPOUND, DESULFURIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1992/1657

STEP NO--UR/0366/70/006/003/0638/0639

CIRC ACCESSION NO--AP0112651

UNCLASSIFIED

672 009

CIRC ACCESSION NO--AP0112651

UNCLASSIFIED

PROCESSING DATE--30OCT70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE IRRADN. OF NA
1,NAPHTHALENESULFONATE IN AQ. SOLN. AT PH 1-13 GAVE NAPHTHALENE.
SEMILARLY, ALPHA AMINO NAPHTHALENE WAS OBTAINED BY THE PHOTOLYTIC
DESULFONATION OF NA 4,AMINO,1,NAPHTHALENESULFONATE IN THE 7-13 PH RANGE.
THE DESULFONATION OF ALPHA ANTHRAQUINONESULFONIC ACID IN WATER GAVE
ANTHRAQUINONE, BUT IN OIL. AMMONIA SOLN. ALPHA AMINONANTHRAQUINONE WAS
FORMED. THE DESULFONATION OF O, P, OR M,H SUB2 NC SUB6 H SUB4 SO SUB3 H
GAVE, RESP., TRACES, 7, AND 40-50PERCENT PHNH SUB2. FACILITY:
LENINGRAD. TEKHNOL. INST. IM. LENSOVETA, LENINGRAD, USSR.

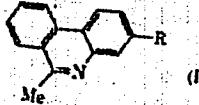
UNCLASSIFIED

470053750

CHEMICAL ABST.

Ref. Code:
4720
470366

111266x Photochemical dehydrocyclization of acetophenone anils. El'tsov, A. V.; Studzinskij, O. P.; Ogol'tsiva, N. V. (Leningrad. Tekhnol. Inst. im. Lensoveta, Leningrad, USSR). Zh. Org. Khim. 1970, 6(2), 405-8 (Russ.). The irradin. with Hg light of PhCMe: NC₂H₅R-3 (R is H or Me) soln. in concd. H₂SO₄



gave 10.8% or 8.2% of the corresponding substituted 6-methyl-phenanthridines (I), resp.

CPJR

REEL/FRAME
19830812

USSR

UDC 539.1.074.55

VARTANOV, N. A., SAMOYLOV, P. S., STUGAREV, Yu. N.

"Operation of Universal Scintillation Coincidence Spectrometer with Ge(Li) Detectors"

Tr. Soyuz. NII Priborostroj. [Works of Union Scientific Research Institute for Instrument Building], 1972, No 17, pp 32-38, (Translated from Referativnyy Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, No 7, 1972, Abstract No 7.32.1408).

Translation: The possibility is studied of the operation of the "Lena" series-produced universal spectrometer with Ge(Li) detectors. The operation of this spectrometer with semiconductor detectors is checked in the double and triple fast-slow coincidence modes. The use of a coincidence circuit with long resolving time ($2\tau \sim 200$ ns) allows the time spread in the rise fronts of pulses to overlap with the Ge(Li) detector, achieving 100% effectiveness of coincidence recording.

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USSR

UDC 8.74

GIRYA, M. G., KUDRINSKIY, V. YU., SERGIYENKO, I. V., STUKALO, A. S.

"Input Language and Processor for Program Controlled Electronic Keyboard Computers"

V sb. Teoriya yazykov i metody postroyeniya sistem programmir. (Language Theory and Methods of Constructing Programming Systems—collection of works), Kiev-Alushta, 1972, pp 265-277 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V482).

Translation: The input problem-oriented language PIKM (programming of engineering problems on keyboard computers) and its execution on one of the models of the program controlled keyboard computers (PEKVM) is described. It is noted that with respect to program structure the PIKM language is close to the FORTRAN language. The program in PIKM comprises the basic program and subroutines. The basic program comprises operators and descriptions separated by semicolons or auxiliary words. The descriptions can appear at any point of the program as needed. The set of descriptive media of the PIKM language is oriented toward the keyboard of the PEKVM, that is, each symbol corresponds to one key. The processor is described which executes the operation of the interpreting system. The algorithm of the interpretation system comprises three basic parts: the 1/2

USSR

GIRYA, M. G., et al., Teoriya yazykov i metody postroyeniya sistem programmir.,
Kiev-Alushta, 1972, pp 265-277

algorithm for preliminary processing of the data written in the input language,
the algorithm for interpreting the internal language of the program level and
the algorithm for the program debugging system. The characteristic of each
algorithm is presented. The bibliography has 13 entries.

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USSR

UDC 669.715'782

BATALIN, G. I., BELOBORODOVA, YE. A., and STUKALO, V. A., Kiev
"Study of Thermodynamic Properties of Al-Si Melts"
Moscow, IAN SSSR, Metally, No 2, Mar-Apr 71, pp 69-74

Abstract: The thermodynamic properties of liquid alloys of aluminum with silicon were determined over a broad concentration range by the emf method. Two series of experiments were performed: the first series involved seven alloys with silicon contents up to 35 at. % in the 950-1270°K temperature range; in the second series of experiments, five alloys with high silicon contents (from 45 to 80 at. % Si) were studied in the 1350-1650°K temperature range. The data produced agree well with the phase diagram of the Al-Si system. Throughout the entire range of concentrations, the isotherms of activity of the components show negative deviations from ideal solutions. Al-Si liquid alloys are characterized by significant positive values of integral heats and excess entropies of formation. The maximum values of these functions are strongly shifted toward the alloys rich in aluminum.

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1/2 034

UNCLASSIFIED

PROCESSING DATE--27NOV70

TITLE--THERMODYNAMIC PROPERTIES OF GERMANIUM ZINC MOLTEN ALLOYS -U-

AUTHOR--(03)-BATALIN, G.I., BELOBORODOVA, YE.A., STUKALO, V.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, METAL. 1970, (2), 147-51. *S*

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, MATERIALS

TOPIC TAGS--THERMODYNAMIC PROPERTY, GERMANIUM ALLOY, ZINC ALLOY,
NONFERROUS LIQUID METAL, ENTHALPY, ENTROPY, ELECTROCHEMISTRY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1613

STEP NO--UR/0370/70/000/002/0147/0151

CIRC ACCESSION NO--APO125235

UNCLASSIFIED

2/2 034

CIRC ACCESSION NO--AP0125235

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THERMODYNAMIC PROPERTIES OF LIQ. SOLNS. OF GE AND ZN WERE STUDIED BY MEASURING OF EMF. OF THE ELECTRODE, CONCN. CELL ZN(L),²HCL SUB2 IN MELT (KCL PLUS NaCl), (GE,ZN)(L), WHERE THE AT. FRACTION OF ZN AND THE TEMP. RANGE WERE 0.9079-0.2240 AND 950-1230DEGREESK, RESP. FOR THE ABOVE AT. FRACTION OF ZN AT 1230DEGREESK THE TEMP. COEFF. OF EMF. AND THE EMF. WERE 0.00649 TO 0.11112 MV-DEGREE AND 6.322 TO 91.305 MV. THERMODYNAMIC QUANTITIES WERE CALCD. FROM THE DATA OBTAINED FOR ZN AND GE AT 1230DEGREESK. FOR THE AT. FRACTION OF GE OF 0.1-0.9 AT 1230DEGREESK THE VALUES OF INTEGRAL FREE ENERGY, ENTHALPY, ENTROPY, EXCESS FREE ENERGY, AND EXCESS ENTROPY ARE GIVEN. THE EMF. WAS A FUNCTION OF THE TEMP. IN HOMOGENEOUS SOLNS. AND DEVIATED FROM THE STRAIGHT LINE WHEN THE SOLNS. STARTED TO BE HETEROGENEOUS. THE TEMP. CORRESPONDING TO THE BEGINNING OF THE DEVIATION IS THE CRIT. TEMP. OF CRYSTN. OF THE SOLN. IN QUESTION. IN THIS WAY, FOR THE SOLNS. CONTG. 0.49, 0.57, 0.62, AND 0.68 AT. FRACTION OF GE, THE TEMPS. OF CRYSTN. WERE FOUND TO BE 723, 773, 798, AND 824DEGREESC, RESP.

UNCLASSIFIED

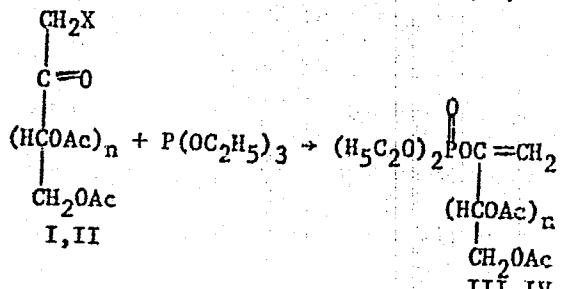
USSR

DOROSHENKO, V. V., KOZHUSHKO, B. N., STUKALO, Ye. A., and SHOKOL, V. A.,
Institute of Organic Chemistry, Academy of Sciences of the UkrSSR

"Dihalophosphonylchloromethylisocyanates"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(103), No 2, Feb 72, pp 484-485

Abstract: Dichloromethyl isocyanate reacts with alkyl difluoro- and dichlorophosphites to form difluorophosphonylchloromethyl isocyanate (I) and dichlorophosphonylchloromethyl isocyanate (II).

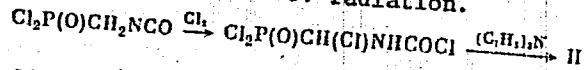


1/2 (I) X=Cl, n=4, D-galacto; (II) X=Br, n=3, L-arabino.

USSR

DOROSHENKO, V. V., et al., Zhurnal Obshchey Khimii, Vol 42(103), No 2, Feb 72,
pp 484-485

Isocyanate (II) is synthesized by chlorination of dichlorophosphonylmethyl
isocyanate (III) in the presence of UV-radiation.



The structure of compounds (I, II, IV) was confirmed by IR-spectroscopy.

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USSR

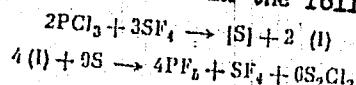
UDC 546.185

MARKOVSKIY, L. N., STUKALO, YE. A., and KIRSANOV, A. V., Institute of
Organic Chemistry, Academy of Sciences Ukraine SSR

"The Reaction of Phosphorus Chlorides with Tetrafluorosulfur"

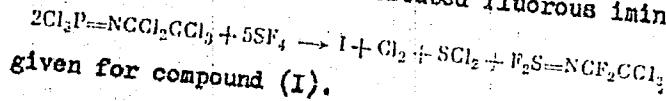
Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 11, 1972, pp 2581-2582

Abstract: The title reaction occurs in the following manner.



Product (I) can also be obtained by the reaction of SF_4 with PCl_3 . The reaction of phosphorus oxychloride with SF_4 in a 1:2 ratio results in the formation of SOF_2 and (I). The reaction of trichlorophosphazoperchloroethane reacts with SF_4 with the formation of (I) and N-substituted fluororous imino-thionyles as follows

Physical properties are
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- 8 -

USSR

UDC 547.26'118

IVANOVA, ZH. M., STUKALO, YE. A., TISHCHISHINA, N. S., DERKACH,
G. I. (DECEASED), Institute of Organic Chemistry, Kiev, Academy
of Sciences Ukrainian SSR

"Isocyanates of Cyclic Ethers and Etheramides of Phosphorus Acids"
Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70,
pp 1942-1948

Abstract: In continuation of previous work, 2-chloro-4-methyl-phosphorinane, N-methyl- and N-phenyl-2-chloro-1,3,2-oxazaphospholanes were reacted with sodium cyanate to yield 2-isocyanato-4-methylphosphorinane and N-methyl- and N-phenyl-2-isocyanato-1,3,2-oxazaphospholanes. These products are soluble in most organic solvents except petroleum ether; they react slowly with water and easily add a sulfur atom when heated with phosphorus thiocloroxide. 2-Isocyanato-2-oxophospholane and 2-isocyanato-2-oxo-4-methyl-phosphorinane react violently with water and easily add alcohols, oximes, enamines, and hetero cyclic methylene bases at the isocyanate group. Their thioanalogues react much slower with water
1/1

4/2 028

UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--RESONANCE SPECTROSCOPIC STUDY OF OXIDIZED STATES IN FERROCENE
COPOLYMERS -U-

AUTHOR--(06)-ALIYEV, L.A., VISHNYAKOVA, T.P., PAUSHKIN, YA.H., PENDIN,
A.A., SOKOLINSKAYA, T.A., STUKAN, R.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, SER. KHIM. 1970, (2), 306-10

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--GAMMA SPECTRUM, FERROCENE, COPOLYMER, PHthalic ANHYDRIDE, ZINC
CHLORIDE, OXIDATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1999/1979

STEP NO--UR/0062/70/000/002/0306/0310

CIRC ACCESSION NO--AP0123760

UNCLASSIFIED

2/2 028

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0123760

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE GAMMA RESONANCE SPECTRA OF COPOLYMERS MADE OF FERROCENE AND ETCOME AND PHTHALIC ANHYDRIDE WERE REPORTED IN CONJUNCTION WITH DETN. OF THE AMT. OF THE OXIDIZED FORM OF FE IN SUCH POLYMERS FROM THE AMT. OF OXIDIZING AGENT CONSUMED. THE COPOLYMER WITH MECHET WAS OXIDIZED TO SMALLER THAN OR EQUAL TO 60PERCENT OF ITS FE CONTENT, WHILE THE COPOLYMER WITH PHTHALIC ANHYDRIDE WAS OXIDIZABLE TO 45PERCENT. THE COPOLYMER WITH PHTHALIC ANHYDRIDE HAVING THE MAX. LEVEL OF OXIDN., RELATIVE TO FERROCENE AND WITH MIN. PROGRESS OF SECONDARY REACTIONS CONTAINED SOME 35PERCENT OXIDIZED FE ACCORDING TO SPECTRAL DATA AND 50PERCENT ACCORDING TO CHEM. DETN. THIS COPOLYMER WAS PREPD. WITH A ZNCL SUB2 CATALYST IN 5 HR AT 1500DEGREES IN AN AUTOCLAVE; THE SUBSTANCE WAS GENERALLY INSOL. THE OXIDNS. WERE DONE WITH K SUB2 CR SUB2 O SUB7 IN ACOH OR WITH A'FECL SUB3 SOLN. IN AN. KCL. FACILITY: INST. KHM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210013-7

FILE--GAMMA RESONANCE SPECTROSCOPIC STUDY OF THE ELECTRON EXCHANGE
UNCLASSIFIED // PROCESSING DATE--27NOV70
BETWEEN FE PRIME2 POSITIVE AND FE PRIME3 POSITIVE IONS IN ICE -U-
AUTHOR-(03)-GOLDANSKIY, V.I., STUKAN, R.A., TOLMACHEV, A.N.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(2), 380-3
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SPECTROSCOPIC ANALYSIS, ACTIVATION ENERGY, CHEMICAL REACTION
KINETICS, ICE, ELECTRON TRANSITION, IRON

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3002/1273

STEP NO--UR/0020/70/191/002/0380/0383
CIRC ACCESSION NO--A0128687

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210013-7"

CIRC ACCESSION NO--AT0128687
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT. THE ELECTRON EXCHANGE BETWEEN FE PRIME2 POSITIVE AND FE PRIME3 POSITIVE IN ICE WAS STUDIED AT MINUS 195 TO MINUS 78DEGREES BY USING THE METHOD OF GAMMA RESONANCE SPECTROSCOPY ANALYSIS IN THE TRACER ATOM METHOD. THE EXCHANGE HAS STUDIED BY USING FE(CLO SUB4) SUB2 SOLNS. HAVING A NORMAL CONCN. OF PRIME57 FE AND FE SEXTILE (CLO SUB4) SUB3 SOLNS. ENRICHED TO 91PERCENT WITH RESPECT TO PRIME57 FE. THE EXCHANGE TAKES PLACE WITH A NOTICEABLE RATE AT MINUS 114DEGREES. THE KINETICS OF THE EXCHANGE REACTION WERE STUDIED AT DIFFERENT TEMPS. AND THE REACTION RATE CONSTS. WERE DETO. AND TABULATED. THE ACTIVATION ENERGY FOR THE EXCHANGE REACTION IS 7.6 PLUS OR MINUS 0.5 KCAL-MOLE.

FACILITY: INST. KHM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 621.575.7.29.52:621.383

STUKAN, V.A., TRIFONOV, V.I.

"Magnetoresistance Effect Low-Frequency Regenerative Amplifiers For Photo-receivers"

Radiotekhnika i Elektronika, Moscow, Vol XVII, No 12, Dec 1972, pp 2558-2574

Abstract: An analysis is made of the circuit of a magnetoresistance amplifier (cooled to the temperature of liquid helium) with a photoreceiver, and of the circuit in the case where sufficiently pure n-InSb magnetoresistance specimens used for submillimeter band receivers are also used as the photosensitive element. It is shown that when the resistance of the photosensitive element is much smaller than the resistance of the magnetoresistance specimen, the noise factor of the amplifier is close to unity. Conditions and requirements are determined for the superconducting solenoid which is used in the amplifier. The types of amplifiers considered are most acceptable for operation with low-resistance photosensitive elements. During operation with relatively high-resistance photosensitive elements they must be connected into the circuit across a step-down transformer. 2 fig. 10 ref. Received by editors, 6 December 1971.

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USSR

UDC 620.193.4

YAROSHINSKIY, I. S., STUKANOGOV, G. A., BEKI, J., Kiev Higher Aviation Engineering Military School

"Method of Separating the Anode Film from the Surface of Aluminum Alloy"
Kiev, Fiziko-Khimicheskaya Mekhanika Materialov, Vol 8, No 2, 1972, pp 112-114

Abstract: A study was made of the effect of ethyl bromide on the corrosion cracking of D16AT alloy. A method and a device are described for separating the thin-layer anodic film from the surface of this alloy. The anodic film entirely located in the pure aluminum cladding layer 60-82 microns thick was separated in a glass device. The specimen was dropped in a 220-250 ml cylinder the ends of which were free of metal containing 100-120 ml of ethyl bromide. The alloy begins to experience noticeable corrosive solution after 20-22 hours of heating (not exceeding 40° C in view of the boiling point of ethyl bromide), and it dissolves completely after 30-38 hours. The corrosion products are stored for later use of the catalyst which reduces the separation time to 12-16 hours. Films 60-80 microns thick with an area of 20 cm² were separated. The method is applicable for separation of thick-layer anodic films from the surfaces of D1Akg, AMTs, and AMG aluminum alloys.

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- 55 -

1/2 OIL
TITLE--INDIVIDUAL COMPOSITION OF A GASOLINE CONDENSATE FRACTION (INITIAL
BOILING POINT 150DEGREES) FROM THE PECHORA KOZHVA GAS CONDENSATE DEPOSIT
AUTHOR--(03)-KRUPENSKIY, V.I., STUKANOVA, L.N., FEDULOV, S.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., NEFT GAZ 1970, 13(3), 68
DATE PUBLISHED-----70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MATERIALS

TOPIC TAGS--GASOLINE, CHEMICAL COMPOSITION, NATURAL GAS, PETROCHEMISTRY,
PETROLEUM DEPOSIT, GEOGRAPHIC LOCATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/2083

CIRC ACCESSION NO--AP0127456

STEP NO--UR/0152/70/013/003/0068/0068

UNCLASSIFIED

2/2 011

CIRC ACCESSION NO--AP0127456 UNCLASSIFIED PROCESSING DATE--23OCT70
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FRACTION CONTAINED IS SIMILAR
TO 100 HYDROCARBONS, INCLUDING 73.3PERCENT PARAFFINIC (52PERCENT
N-PARAFFINIC), 1.3PERCENT AROMATIC, AND 25.4PERCENT NAPHTHENIC, BEING
ALSO SUITABLE AS PETROCHEM. RAW MATERIAL. FACILITY: UKHT. IND.
INST., UKHTA, USSR.

UNCLASSIFIED

USSR

UDC: 537.311.33:546.19'681

STUKEN, I. B., KARTASHEVA, I. A., IVANOVA, M. A.

"Change in the Electrical Properties of Gallium Arsenide With Beryllium Diffusion"

V sb. Raschety radiotekhn. skhem i projektir. radioapparatury (Calculations of Radio Circuits and Design of Radio Equipment--collection of works), Omsk, 1970, pp 109-111 (from RZh-Elektronika i yeye Primeneniye, No 6, Jun 71, Abstract No 6B52)

Translation: It is demonstrated that beryllium is an acceptor impurity in gallium arsenide. Beryllium was introduced into specimens of GaAs of type N ($N = 5 \cdot 10^{17}/\text{cc}$ and $7 \cdot 10^{17}/\text{cc}$) by diffusion (depth of the PN junction was 12-30 microns). The surface conductivity σ and the Hall effect were measured in the initial specimens and in the specimens after beryllium diffusion. In specimens with initial concentration $N = 5 \cdot 10^{17}/\text{cc}$, the shallow acceptor level with activation energy of ~ 0.04 eV was determined from the relation $\log V_x = f(1/T)$; this level is due to beryllium. Bibliography of 3 titles. M. D.

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- 140 -

USSR

Aerosols

UDC 543.841(546.42+546.641); 541.182.2/3

YUSHKAN, YE. I., ROVINSKIY, F. YA., STUKIN, YE. D., IOKHEL'SON, S. B., and
TSYBUL'NIK, G. S.

"Express Method for the Determination of ^{90}Sr , ^{89}Sr , and ^{91}Y in Aerosol Samples"
Leningrad, Radiokhimiya, Vol 13, No 6, 1971, pp 872-875

Abstract: A rapid method for concurrent determination of ^{90}Sr , ^{89}Sr , and ^{91}Y has been developed. Aerosol samples collected on filters are combusted at 500° and treated repeatedly first with a mixture of hydrofluoric acid and nitric acid, then with concentrated HNO_3 . Dry residue is dissolved in 1 M HCl, strontium and yttrium carriers are added, and strontium sulfates are precipitated by addition of a 5% H_2SO_4 solution followed by alcohol. The precipitate is separated by centrifugation and redissolved in 10% ammoniacal solution of trilon B. Yttrium remains in original mother liquor. From this step both materials are processed concurrently. To separate strontium it is converted to a carbonate salt, redissolved, $\text{Fe}(\text{NO}_3)_3$ is added to precipitate Fe(OH)_3 and strontium finally converted again to the carbonate, its activity is counted on a β -spectrometer. In the other sample yttrium is isolated in form of a hydroxide, redissolved to remove possible accompanying impurities of Ce and Sr

USSR

YUSHKAN, YE. I., et al., Radiokhimiya, Vol 13, No 6, 1971, pp 872-875

by precipitating them as sulfates, and yttrium is finally reprecipitated as a hydroxide, converted to an oxalate and its activity is counted on a β -spectrometer. Both materials are obtained in yields of 75-85%.

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- 13 -

USSR

UDC 621.039.564.2(017)(083.76)

YARITSYNA, I. A., SHCHEBOLEV, V. T., FOMINYKH, V. I., and STUKOV, G. M.

"Primary Government Standard for Neutron Flux Units"

Moscow, Izmeritel'naya Tekhnika, No 8, 1972, pp 8-11

Abstract: Beginning with 1960, when the first designs for equipment based on the method of concomitant particles were developed, work has been carried on at the D. I. Mendeleyev VNIIM (All-Union Scientific Research Institute of Metrology) to set up a primary government standard for the unit of neutron flux. This standard, approved by the Committee on Standards on 13 May 1969, involves complex measurement methods using three standard devices: the UEN-1, UEN-2, and UEN-3. The basic theory of these devices is discussed and a photograph of the first instrument in an external view is reproduced. A comparison of the Soviet method with those of other nations, made in 1962-1964 using the Canadian Ra-Be (α, n) neutron source No 200-1, is described.

1/1

Pharmacology and Toxicology

USSR

UDC: 577.1:615.7/9

MIKHAYLOV, N. Ye., IVAKHNIKOVA, T. G., VOLGINA, A. V., and STUKOVA, I. A.
"Action of Methyl Ester of Acrylic Acid on an Organism After Inhalational
Administration"

Materialy Nauchn. konferentsii po vopr. gigiyeny i proftatol. v. khim. prom-
stii--Sbornik (Materials of the Scientific Conference on Problems of Hygiene and
Occupational Pathology in the Chemical Industry -- Collection of Works), Saratov,
1970, pp 41-43 (from Referativnyy Zhurnal -- Biologicheskaya Khimiya, No 7,
10 Apr 71, Abstract No 7F2391)

Translation: A study was made of the activity in blood of cholinesterase, catalase, and the content of SH-groups, G-SH, and Hb in rats subject to inhalational intoxication with the methyl ester of acrylic acid (I; 5-50 mg/m³; 4 hours). The activity of cytochromoxidase was determined after seven months in liver and brain homogenates, while the activity of succinated hydrogenase was determined in liver homogenates. Determinations were also made of the vitamin C and cholesterol concentrations in blood serum. The toxic effect of I at a concentration of 50 mg/m³ was shown; reduced redox reactions and threshold effect on the gonads was observed at a concentration of 20 mg/m³. Concentrations of 10 and 5 mg/m³ were not toxic.

USSR

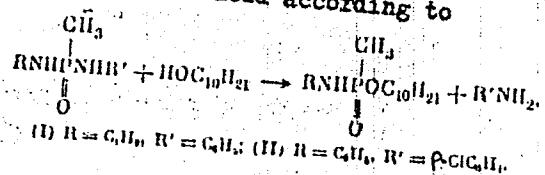
UDC 547.26'118

ZAVLIN, P. M., FEDOSEYEVA, A. S., DUDYAK, N. K., and STUL'NIKOVA, N. A.,
 Leningrad Institute of Motion Picture Engineers

"Nucleophilic Substitution in the Presence of Unsymmetric Diamides of
 Methylphosphonic Acid"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), Vyp 10, 1972, p 2347

Abstract: Heating of the *N*-butyl-*N'*-phenyldiamide (I) and the *N*-phenyl-*N'*-*p*-chlorophenyldiamide (II) of methylphosphonic acid with decyl alcohol at 220-260°C yielded aniline (I) and *p*-chloraniline, and the corresponding amidosester of methylphosphonic acid according to



The reaction of (I) with decyl alcohol yielded aniline (n_{D}^{20} 1.5840) and the
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ZAVLIN, P. M., et al., Zhurnal Obshchey Khimii, Vol 42 (104), Vyp 10, 1972,
p 2347

butylamide of decyl methylphosphonate, b.p. 235°C (8 mm), n_D^{20} 1.5080. The
reaction of (II) with decyl alcohol yielded p-chloraniline, b.p. 70°C, and
the decyl ester anilide of methylphosphonic acid, b. p. 189°C (3 mm). The
structure of the initial and end products was verified by IR spectra.

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UDC: 621.398

MIKHAYLOV, I. I., TUPAS, V. I., STULOV, V. A., SHCHEDROV, N. I.,
and PUKHOVICH, V. M. /Automation Institute/

"Frequency Selector Device"

USSR Author's Certificate No 299945, filed 8 Dec 69, published
27 May 71 (from RZh-Avtomatika, telemekhanika i vychislitel'naya
tekhnika, No 12, 1971, Abstract No 12A237P)

Translation: A frequency selector device contains an oscillatory circuit, a nonlinear frequency-dependent circuit, and a rectifier. It differs in that, with the purpose of providing band pass stability and a constant output signal level, the nonlinear frequency-dependent circuit is in the form of a series-connected differentiating and integrating RC network, while the differentiating circuit is connected with autotransformer coupling to the input of the oscillatory circuit, whose load is connected in series to the load of the rectifier for the voltage picked up from the secondary winding of the oscillatory circuit.

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USSR

UDC: 621.396.662.4

MIKHAYLOV, I. I., TUPAS, V. I., STULOV, V. A., SHCHEDROV, N. I., PUKHOVICH,
V. M., Institute of Automation

"A Frequency-Selective Device"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki,
No 12, Apr 71, Author's Certificate No 299945, Division H, filed 8 Dec 69,
published 26 Mar 71, p 207

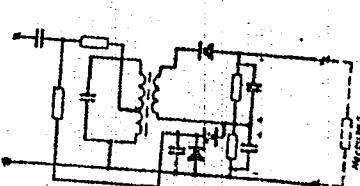
Translation: This Author's Certificate introduces a frequency-selective device which contains a tank circuit, a nonlinear frequency-dependent circuit and rectifiers. As a distinguishing feature of the patent, in order to stabilize the passband and make the output signal level constant, the nonlinear frequency-dependent circuit is made in the form of a differentiating RC network and an integrating RC network connected in series. The differentiating network is connected by autotransformer coupling to the input of the tank circuit, and the integrating network is connected to the input of a rectifier whose load is connected in series with the load of the rectifier for the voltage taken from the secondary winding of the tank circuit.

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"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210013-7

MIKHAYLOV, I. I., USSR Author's Certificate No 299945



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APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203210013-7"

USSR

STULOV, V. A.

UDC: 681.332.65

"Trinary Code-Decimal Code Converter"

Pribory i Sistemy Avtomatiki. Resp. Mezhvéd. Nauchno-Tekhn. Sb. [Automation Devices and Systems. Republic Interdepartmental Scientific-Technical Collection], No 13, 1970, pp 85-87 (Translated from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, 1970, Abstract No 10B120, by T. D.)

Translation: A trinary code to decimal code converter is described. Its operation is based on conversion of the trinary code to a unit code, then to a decimal code. The ones or twos pulses of each position are converted to one or more series of pulses, the number of these series being equal to the number of decimal digits in the converted code. The device is based on semiconductor elements. The converter is a part of system for remote signalling from a large number of tested points installed on trolley buses. It is designed for conversion of information from the points to a form convenient for recording. Since the converter is a discrete device, it introduces no additional error during conversion of codes. Two illustrations; two biblio. refs.
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R_{Reyn} / R², M_∞ / S_{MR}², η₃

around various bodies (a sphere, a right circular cylinder, an ellipsoid, a hyperboloid of revolution, and a blunt cone) for Reynolds numbers $R \leq 10^3$ and Mach numbers $2 \leq M_{\infty} \leq 15$. Calculation results revealed a weak upstream transmission of the perturbation; this permitted calculation of the flow field on the windward side of the body in the stream independently of the flow on the lee side. The solutions are sought using an explicit difference scheme by the method of adjustments. The density, pressure, and heat flow characteristics, the resistance coefficients, and the position of the shock wave and of the sonic line are listed for various values of R and M_{∞} . Good agreement with experimental data for $R > 10$ is indicated.

Stulov,

V.

P.

G.

F.

Telenin,

and

I.

Terchak.

Supersonic flow around blunt bodies in various gas mixtures with high speed chemical reactions. IN: dinamika i ego modelirovaniye metodami v gasovoy gazodinamike v zaryad reagiruyushchikh sistem. no. 5(114)

A numerical method is proposed for the calculation of flow near the frontal part of axisymmetric blunt bodies in various gas mixtures. The notion that the total system of the equations of relaxation dynamics is divided into two systems, one of which (the equations of motion) is solved by the conventional method, while an implicit difference scheme along the streamline is used for solving the relaxation equations. The problem is solved for deriving the possible to investigate flow with an arbitrary degree of unevenness. The calculations assume that the supersonic flow around the body.

UDC: 629.78.015.533.6.011.5

STULOV, V. P., SHAPIRO, Ye. G.

"Radiant Heat Exchange With Hypersonic Flow of Air Around Blunt Bodies"

V sb. Nauchn. konferentsiya. In-t mekhan. MGU. Tezisy dokl. (Scientific Conference of the Institute of Mechanics of Moscow State University. Summaries of the Reports), Moscow, 1970, pp 60-61 (from RZh-Rakotosstroyeniye, No 8, Aug 70, Abstract No 8.41.82)

Translation: When studying the motion of a body in the atmosphere, the following groups of physical processes are ordinarily considered: 1) non-equilibrium physicochemical conversions associated with the molecular structure of the gas; 2) molecular transfer phenomena and rarefaction effects; 3) radiation. On the basis of the results of a series of papers, an estimate is made of the effect which all three groups of processes have on flow around a sphere two meters in radius. There is a region of variation in the determining parameters where viscosity is insignificant -- the boundary layer is thin. Thermodynamic equilibrium is reached, and the radiation flux of energy to the critical point exceeds the convective flux. When absorption and radiation cooling are taken into account, the system of equations of dynamics of a radiating gas reduces to a nonlinear integrodifferential system
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STULOV, V. P., SHAPIRO, Ye. G., Nauchn. konferentsiya. In-t Mekhan. MGU.
Tezisy dokl., Moscow, 1970, pp 60-61

of equations. The problem of flow around the body is solved by the method of iterations. In each iteration, it is assumed that the contribution of radiation in the energy equation ($\text{div } s$) is known, and the system of gas dynamic equations is solved by the G. F. Telenin method. The radiation output strongly changes the distribution of temperature and density in the region between a shock wave and the surface of the body in the flow. Velocity and pressure fields are practically independent of gas radiation. The radiation fluxes incident on the body are determined for different velocities of the oncoming flow V_∞ and blunting radius R . Deceleration of a gas particle along the axis of symmetry causes somewhat of a reduction in the radiation flux to the critical point as compared with the radiation flux from a plane layer of the same thickness behind the direct shock wave. Distribution of the radiant flux reduced to the flux to the critical point along the surface of a sphere at various values of V_∞ and R is approximated by a single-parameter family of curves. The parameter depends only on the velocity of the oncoming flow. This dependence has the following simple

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STULOV, V. P., SHAPIRO, Ye. G., Nauchn. konferentsiya. In-t Mekhan. MGU.
Tezisy dokl., Moscow, 1970, pp 60-61

form: $q_r/q_{r_0} = \cos^n\theta$, $n = n(v_\infty)$. Comparison with the distributions of convective heat flux available in the literature shows that radiation flux decreases appreciably faster than convective flux with an increase in distance from the critical point. Because of this, the region of the surface where radiation heating exceeds convective heating is concentrated in the forward section of the body in the flow. Résumé.

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STULOV, V. P., Moscow

"Boundary Layer Equations in an Emitting Gas"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 1, January-February 1971, pp 68-75

Abstract: The equations of the dynamic boundary layer in a thermally conducting gas are investigated in this article. The boundary layer equations in an emitting and absorbing gas are derived for various assumptions regarding the magnitudes of the parameters determining the interaction of the emission with the moving gas. The method of boundary layer corrections [M. I. Vishik, L. A. Lyusternik, "Regular Degeneration and the Boundary Layer for Linear Differential Equations with a Small Parameter," Usp. Matem. N. (Progress in the Mathematical Sciences), Vol 12, No 5 (59), 1957, pages 3-122; "Asymptotics of Solution of Boundary Problems for Quasilinear Differential Equations," Dokl. AN SSSR (Reports of the USSR Academy of Sciences), Vol 121, 1958, pages 778-781] is used to construct the approximate solution of the system of equations of motion of the gas considering emission with large values of the Reynolds number.

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STULOV, V. P., Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 1,
January-February 1971, pp 68-75

A system of sufficiently smooth functions such that application of the operator of a system of differential equations and boundary conditions to it gives a result on the order of ϵ^{n+1} (where ϵ is a small parameter) is considered by an approximate n-th order solution. In other words, the given system of functions must satisfy the system of equations and boundary conditions with disparities on the order of ϵ^{n+1} . In each approximation the solution consists of two parts — smooth and local. The smooth part of the solution is the partial sum of a power series with respect to ϵ . The small parameter appears for the high-order derivatives; therefore, the order of the equations for the smooth part is below the order of the initial system of equations as a result of which it is impossible to satisfy all the boundary conditions. In order to eliminate the disparity which appears in the boundary conditions, the local part of the solution is constructed consisting of functions which damp rapidly on going away from the boundary. In order to obtain a system of equations describing the local part of the solution, the "fast" variable $\eta = y/\epsilon$ is introduced. By simple transformation of the desired functions, the equations for the local part of the solution are reduced to the boundary layer equations.

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USSR

STULOV, V. P., Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti Gaza, No 1, January-February 1971, pp 68-75

It is noted that within the framework of the assumptions of constancy of the transport and absorption coefficients made in this paper, the presented boundary layer equations are valid only under the condition that the gas emits as an absolutely black body outside the boundary layer.

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UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--RADIATION OF THE SHOCK LAYER DURING THE HYPERSONIC STREAMLINE FLOW
OF AIR AROUND BLUNT BODIES -U-

AUTHOR--(02)-STULOV, V.P., SHAPIRO, YE.G.

COUNTRY OF INFO--USSR

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SOURCE--MOSCOW, IZVESTIYA AKADEMII NAUK SSSR, MEKHANIKA ZHIDKOSTI I GAZA,
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2/2 044 UNCLASSIFIED

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CIRC ACCESSION NO--AP0103882

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SOLUTION IS FOUND FOR THE PROBLEM OF THE FLOW OF RADIATIVE AIR IN A SHOCK LAYER FORMED DURING HYPERSONIC STREAMLINE FLOW OF THE AIR AROUND BLUNT BODIES. THE OUTPUT OF RADIATION GREATLY CHANGES THE TEMPERATURE AND GAS DENSITY FIELD AND HAS PRACTICALLY NO EFFECT UPON PRESSURE AND VELOCITY. IT IS SHOWN THAT ACCOUNTING FOR RADIATION IN THE SPECTRAL LINES IS VERY IMPORTANT IN SOLVING THE PROBLEM OF A RADIATIVE STREAM. THE DISTRIBUTIONS OF A RADIANT FLUX ALONG A SPHERICAL CONTOUR REFERRED TO THE RADIANT FLUX IN THE CRITICAL POINT, AT VARIOUS VALUES OF THE VELOCITY OF THE AIRSTREAM V_{∞} AND THE SIDE OF THE BODY R ARE APPROXIMATED BY A MONOPARAMETRIC FAMILY OF FUNCTIONS, THE PARAMETER DEPENDING ONLY ON V_{∞} . AS THE DISTANCE FROM THE CRITICAL POINT INCREASES, THE RADIANT FLUX DECREASES CONSIDERABLY MORE RAPIDLY THAN THE CONVECTIVE FLUX. THEREFORE THE REGION OF THE SURFACE OF THE BODY IN WHICH RADIATIVE HEATING EXCEEDS CONVECTIVE HEATING IS CONCENTRATED IN THE LEADING PART OF THE BODY AROUND WHICH THE STREAM FLOWS.

UNCLASSIFIED

USSR

STULOV, V. P., SHAPIRO, Ye. G.

"Radiation of the Shock Layer During the Hypersonic Streamline Flow of Air Around Blunt Bodies"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 1, Jan-Feb 1970, pp 154-160

Abstract: A solution is found for the problem of the flow of radiative air in a shock layer formed during hypersonic streamline flow of the air around blunt bodies. The output of radiation greatly changes the temperature and gas-density field and has practically no effect upon pressure and velocity. It is shown that accounting for radiation in the spectral lines is very important in solving the problem of a radiative stream. The distributions of a radiant flux along a spherical contour referred to the radiant flux in the critical point, at various values of the velocity of the airstream v_{∞} and the size of the body R are approximated by a monoparametric family of functions, the parameter depending only on v_{∞} . As the distance from the critical point increases, the radiant flux decreases considerably more rapidly than the convective flux.

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